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APPLICATION NO. 09/674,195

Listing of Claims

1. (Currently amended) An isolated *Histoplasma capsulatum* M antigen-specific nucleic acid selected from the group consisting of comprising:
 - a nucleic acid having a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;
 - a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;
 - an *H. capsulatum* M antigen-specific fragment of a nucleic acid having of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; and
 - an *H. capsulatum* M antigen-specific fragment of a nucleic acid having with a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

wherein the nucleic acid does not contain the nucleotide sequences 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14), 5'TATTAGCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15), 5'CCCCGAAGGGCATTGGTTTTATCTAATAAACACCCCC3' (SEQ ID NO:16), or nucleotide sequences complementary thereto,

and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer having a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17), 5'CATGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18), 5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or 5'CGAAGUCGAGGCUUUCAGCAUG3' (SEQ ID NO:20).
2. (Original) The nucleic acid of Claim 1, wherein the nucleic acid has the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

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3. (Original) The nucleic acid of Claim 1, wherein the nucleic acid has a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

4 - 5. (Canceled)

6. (Currently amended) The *H. capsulatum* M antigen-specific nucleic acid of Claim 1, wherein the nucleic acid is an *H. capsulatum* M antigen-specific fragment of a nucleic acid ~~having a nucleotide sequence as set forth in the Sequence Listing as of~~ SEQ ID NO:1.

7. (Currently amended) The *H. capsulatum* M antigen-specific nucleic acid of Claim 1, wherein the nucleic acid is an *H. capsulatum* M antigen-specific fragment of a nucleic acid ~~having with~~ a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

8 - 9. (Canceled)

10. (Withdrawn) An isolated or recombinantly-produced antigen specific to *Histoplasma capsulatum* comprising:

a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1; or

a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

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11. (Withdrawn) The antigen of Claim 10, wherein the antigen is a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

12. (Withdrawn) The antigen of Claim 11, wherein the antigen has an amino acid sequence as set forth in the Sequence Listing as SEQ ID NO:2.

13. (Withdrawn) The antigen of Claim 10, wherein the antigen is a fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

14. (Withdrawn) The antigen of Claim 10, wherein the antigen is a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

15. (Withdrawn) The antigen of Claim 10, wherein the antigen is a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

16. (Currently amended) A vector comprising a an *H. capsulatum* M antigen-specific nucleic acid, wherein the nucleic acid[[;]] has a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1[[;]] or is an *H. capsulatum* M antigen-specific fragment of a nucleic acid having of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or, and wherein the vector is suitable for expressing the nucleic acid.

17. (Original) The vector of Claim 16, wherein the nucleic acid has a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1.

18. (Canceled)

19. (Currently amended) The vector of Claim 16, wherein the nucleic acid is an *H. capsulatum* M antigen-specific fragment of a nucleic acid having of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID 1.

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20. (Canceled)

21. (Withdrawn) A method for detecting a previous or current *Histoplasma capsulatum* infection in a subject, comprising:

(a) contacting a fluid or tissue sample from the subject which contains antibodies with an isolated or recombinantly-produced antigen which is specific to *Histoplasma capsulatum*; and

(b) detecting the presence of binding between the antibodies and the antigen, the presence of binding indicating the presence of a previous or current *Histoplasma capsulatum* infection in a subject,

wherein the antigen is:

a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1; or

a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing 30 as SEQ ID NO:1.

22. (Withdrawn) The method of Claim 21, wherein the antigen is a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1.

23. (Withdrawn) The method of Claim 22, wherein the antigen has an amino acid sequence as set forth in the Sequence Listing as SEQ ID NO:2.

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24. (Withdrawn) The method of Claim 21, wherein the antigen is a fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

25. (Withdrawn) The method of Claim 21, wherein the antigen is a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

26. (Withdrawn) The method of Claim 21, wherein the antigen is a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

27. (Withdrawn) An isolated antibody produced against an antigen of Claim 10.

28. (Withdrawn) A kit for detecting a previous or current *Histoplasma capsulatum* infection in a sample comprising:

(a) an isolated nucleic acid of Claim 1, an isolated or recombinantly-produced antigen of Claim 10 or an isolated antibody of Claim 27; and

(b) instructions describing the use of the nucleic acid, antigen or antibody in the detection of a previous or current *Histoplasma capsulatum* infection.

29. (Withdrawn) The kit of Claim 28, wherein the kit contains an antigen, and the antigen is a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

30. (Withdrawn) The kit of Claim 28, wherein the kit contains an antigen, and the antigen is a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

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31. (Currently amended) A isolated host cell for expressing a polypeptide, comprising a vector containing a nucleic acid, wherein the vector is suitable for expressing the nucleic acid, and wherein the nucleic acid:

has a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or is an *H. capsulatum* M antigen-specific fragment of a nucleic acid ~~having of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or~~

32. (Currently amended) The isolated host cell of claim 31, wherein the nucleic acid has a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1.

33. (Canceled)

34. (Withdrawn) A method for detecting a past exposure to the fungus *Histoplasma capsulatum* comprising:

(a) injecting intradermally in the skin of a patient an effective amount of an isolated or recombinantly-produced antigen which is specific to *Histoplasma capsulatum*; and

(b) observing the skin at the injection site at a predetermined time after injection for a presence of swelling of the skin, the presence of swelling of the skin indicating a past exposure by the patient to the fungus *Histoplasma capsulatum*,

wherein the polypeptide is:

a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

an antigenic fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1; or

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an antigenic fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

35. (Withdrawn) The method of Claim 34, wherein the antigen is a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence as set forth in the Sequence Listing 5 as SEQ ID NO:1.

36. (Withdrawn) The method of Claim 34, wherein the antigen is an antigenic fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

37. (Withdrawn) The method of Claim 34, wherein the antigen is a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

38. (Withdrawn) The method of Claim 34, wherein the antigen is a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

39. (Withdrawn) A vaccine for the prevention of histoplasmosis comprising:
(a) an effective amount of a nucleic acid of claim 1 or an isolated or recombinantly-produced antigen of Claim 10; and
(b) a pharmaceutically-acceptable carrier.

40. (Withdrawn) A method for detecting a current *H. capsulatum* infection in a subject suspected of having an *H. capsulatum* infection comprising:

(a) contacting a fluid or tissue sample from the subject which contains antigens with antibodies generated against an antigen which contains an epitope which is unique to *H. capsulatum*; and

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(b) detecting the presence of binding between the antigens and the antibodies, the presence of binding indicating the presence of a current *H. capsulatum* infection in the subject, wherein the antigen is:

a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a fragment of a polypeptide encoded by a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1; or

a fragment of a polypeptide encoded by a nucleic acid which is substantially the same as a nucleic acid having a nucleotide sequence, which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1.

41. (Withdrawn) An isolated *Histoplasma Capsulatum* M antigen comprising a mature polypeptide consisting essentially of the polypeptide of SEQ ID NO:2 starting with the serine residue of amino acid position 17.

42. (Withdrawn) The isolated *Histoplasma Capsulatum* M antigen of claim 41, wherein the polypeptide is a recombinant polypeptide.

43. (Withdrawn) The isolated *Histoplasma Capsulatum* M antigen of claim 42, wherein the polypeptide is produced in a prokaryotic host.

44. (Withdrawn) The isolated *Histoplasma Capsulatum* M antigen of claim 41, wherein the protein does not contain carbohydrate moieties.

45 - 46. (Canceled)

47. (Currently amended) An isolated nucleic acid comprising consisting of:
a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;

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a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific nucleic acid which is 90% similar to a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific nucleic acid which is 90% similar to a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific fragment of nucleic acid which is 90% similar to a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or

an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence which is 90% similar to a nucleic acid which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

wherein the nucleic acid does not contain the nucleotide sequences 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14), 5'TATTAGCTCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15), 5'CCCCGAAGGGCATTGGTTTTATCTAATAAACACACCC3' (SEQ ID NO:16), or nucleotide sequences complementary thereto,

and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer consisting of a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17), 5'CATGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18),

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5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or

5'CGAAGUCGAGGCUUUCAGCAUG3' (SEQ ID NO:20).

48. (Currently amended) An isolated nucleic acid comprising consisting of:

- a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;
- a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;
- an *H. capsulatum* M antigen-specific nucleic acid which is 95% similar to a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;
- an *H. capsulatum* M antigen-specific nucleic acid which is 95% similar to a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;
- an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;
- an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;
- an *H. capsulatum* M antigen-specific fragment of nucleic acid which is 95% similar to a nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or
- an *H. capsulatum* M antigen-specific fragment of a nucleic acid consisting of a nucleotide sequence which is 95% similar to a nucleic acid which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

wherein the nucleic acid does not contain the nucleotide sequences

5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14),

5'TATTAGCTCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15),

5'CCCCGAAGGGCATTGGTTTTATCTAATAATACACCCCC3' (SEQ ID NO:16), or

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nucleotide sequences complementary thereto,

and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer consisting of a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17),
5'CAGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18),
5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or
5'CGAAGUCGAGGCUUCAGCAUG3' (SEQ ID NO:20).

49. (Canceled)

50. (New) An isolated *Histoplasma capsulatum* M antigen-specific nucleic acid comprising:
a nucleic acid having a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; or
a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;
wherein the nucleic acid does not contain the nucleotide sequences
5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14),
5'TATTAGCTCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15),
5'CCCCGAAGGGCATTGGTTTTATCTAATAAACACCCCC3' (SEQ ID NO:16), or
nucleotide sequences complementary thereto,

and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer having a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17),
5'CAGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18),
5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or
5'CGAAGUCGAGGCUUCAGCAUG3' (SEQ ID NO:20).

51. (New) An isolated nucleic acid consisting of:

an *H. capsulatum* M antigen-specific fragment of a nucleic acid of SEQ ID NO:1; or

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an *H. capsulatum* M antigen-specific fragment of a nucleic acid of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

wherein the nucleic acid does not contain the nucleotide sequences
5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14),
5'TATTAGCTCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15),
5'CCCCGAAGGGCATTGGTTTTATCTAATAAACACACCCC3' (SEQ ID NO:16), or
nucleotide sequences complementary thereto,
and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer having a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17),
5'CAGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18),
5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or
5'CGAAGUCGAGGCUUUCAGCAUG3' (SEQ ID NO:20).

52. (New) An isolated *Histoplasma capsulatum* M antigen-specific nucleic acid selected from the group consisting of:

a nucleic acid having a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1;

a nucleic acid having a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

an *H. capsulatum* M antigen-specific fragment of a nucleic acid, the nucleic acid consisting of a nucleotide sequence as set forth in the Sequence Listing as SEQ ID NO:1; and

an *H. capsulatum* M antigen-specific fragment of a nucleic acid, the nucleic acid consisting of a nucleotide sequence which is complementary to the nucleotide sequence set forth in the Sequence Listing as SEQ ID NO:1;

wherein the nucleic acid does not contain the nucleotide sequences
5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:14),

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5'TATTAGCTCTAGAATTACCACGGGTATCCAAGTAGTAAGG3' (SEQ ID NO:15),
5'CCCCGAAGGGCATTGGTTTTATCTAATAAATACACCCC3' (SEQ ID NO:16), or
nucleotide sequences complementary thereto,

and wherein the nucleic acid is not a nucleic acid consisting essentially of between 10 and 100 nucleotides which is able to form a hybrid at 60°C with a nucleotide polymer having a nucleotide sequence of 5'CGAAGTCGAGGCTTCAGCATG3' (SEQ ID NO:17),

5'CATGCTGAAAGCCTCGACTTCG3' (SEQ ID NO:18),
5'CAUGCUGAAAGCCUCGACUUCG3' (SEQ ID NO:19) or
5'CGAAGUCGAGGCUUUCAGCAUG3' (SEQ ID NO:20).

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